Volunteer Lake Assessment Program Individual Lake Reports

STONE POND, MARLBOROUGH, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	704	**Max. Depth (m):**	14.6	**Flushing Rate (yr^{1})**	1
Surface Area (Ac.):	65	**Mean Depth (m):**	6	**P Retention Coef:**	0.63
Shore Length (m):	2,400	**Volume (m^{3}):**	1,570,500	**Elevation (ft):**	1296

TROPHIC CLASSIFICATION

Year	Trophic class
1979	OLIGOTROPHIC
1993	OLIGOTROPHIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

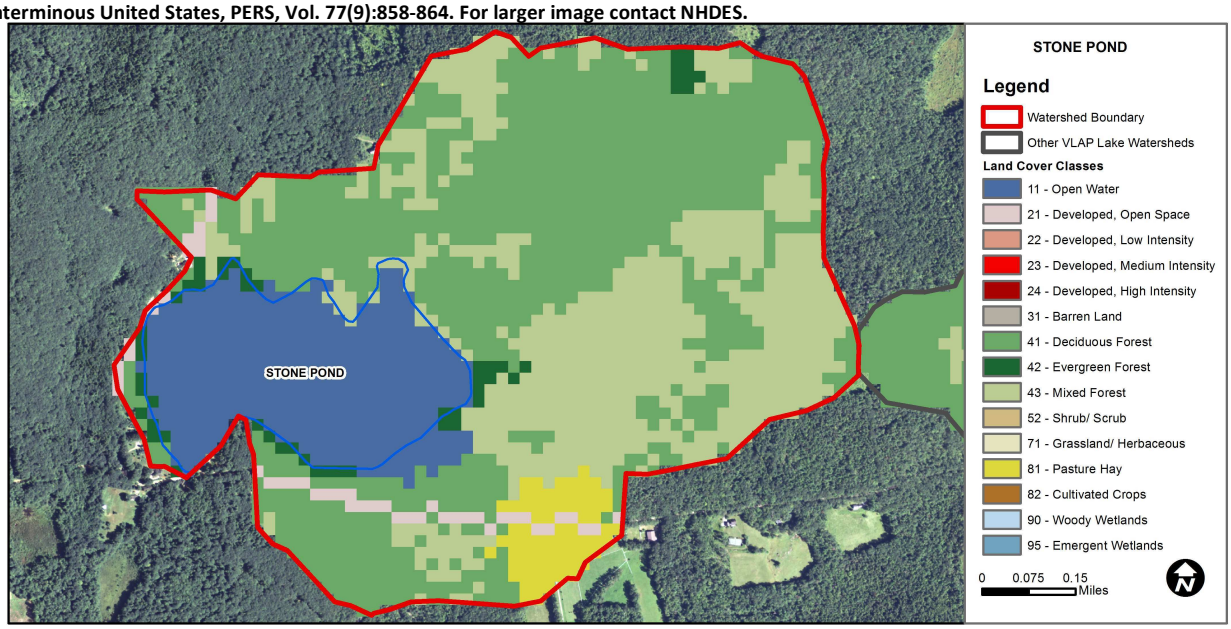
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator and the chlorophyll a indicator is okay.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	Oxygen, Dissolved	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Dissolved oxygen satura	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Chlorophyll-a	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator.
Primary Contact Recreation	Escherichia coli	No Data	No data for this parameter.
	Chlorophyll-a	Very Good	There are a total of at least 10 samples with 0 exceedances of indicator.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

STONE POND - TOWN BEACH	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	17.1	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	2.18	Deciduous Forest	45.64	Pasture Hay	3.34
Developed-Low Intensity	0	Evergreen Forest	2.46	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	29.5	Woody Wetlands	0
Developed-High Intensity	0	Shrub-Scrub	0	Emergent Wetlands	0

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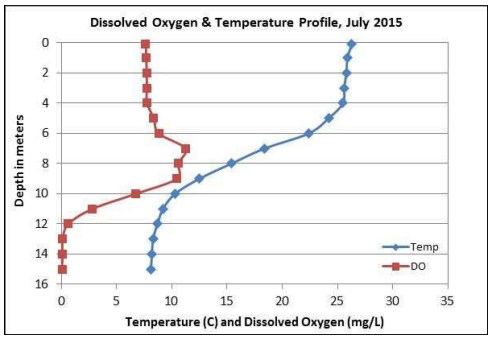
Stone Pond, Marlborough

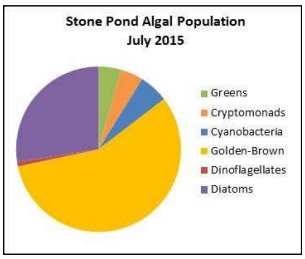
2015 Data Summary

Recommended Actions: Pond water quality is generally representative of Oligotrophic, or high quality water, conditions. However, Inlet phosphorus and turbidity levels were elevated. The Inlet is located in a more densely populated portion of the watershed. Educate residents living close to the Inlet about managing stormwater runoff, nutrient pollution and erosion from their properties, steep slopes, agricultural areas, and dirt and gravel roads and driveways. DES' "N.H. Homeowner's Guide to Stormwater Management" is a great resource. Keep up the great work!

Observations (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **Chlorophyll-a:** Chlorophyll levels were low and stable from June to July and increased slightly in September. The 2015 average chlorophyll level was stable with 2014 and less than the state median. Historical trend analysis indicates relatively stable chlorophyll levels with moderate variability between years.
- **Conductivity/Chloride:** Deep spot, Inlet and Outlet conductivity levels remained low and less than the state median. Historical trend analysis indicates significantly decreasing (improving) epilimnetic (upper water layer) conductivity levels since monitoring began.
- **Total Phosphorus:** Epilimnetic phosphorus levels were low and decreased from June to September. Average epilimnetic phosphorus was stable with 2014 and much less than the state median. Historical trend analysis indicates highly variable epilimnetic phosphorus levels since monitoring began. Metalimnetic (middle water layer) phosphorus levels increased slightly from June to July and then decreased in September. Hypolimnetic (lower water layer) phosphorus levels were slightly elevated in June and July and decreased to low levels in September. Inlet phosphorus levels were elevated in July and September and the turbidity was also slightly elevated. Outlet phosphorus levels were low.
- **Transparency:** Transparency (NVS) was high (good) in June, decreased (worsened) to a low level in July due to wave conditions, and then increased (improved) slightly in August. Average NVS transparency decreased from 2014 but was better than the state median. Historical trend analysis indicates stable transparency since monitoring began. Transparency measured with the viewscope (VS) in July was much better than NVS and a better representation of actual conditions.
- **Turbidity:** Epilimnetic and Metalimnetic turbidity was slightly elevated in July potentially due to wind and wave action mixing algae throughout the layers. Hypolimnetic turbidity was slightly elevated in July potentially due to the accumulation of organic compounds in hypolimnetic waters as the summer progresses and dissolved oxygen levels decreased below 1.0 mg/L. Inlet turbidity was elevated in July and September.
- **pH:** Deep spot and Inlet pH levels were less than the desirable range 6.5-8.0 units and historical trend analysis indicates significantly decreasing (worsening) epilimnetic pH since monitoring began.





Station Name	Table 1. 2015 Average Water Quality Data for STONE POND							
	Alk. mg/l	Chlor-a ug/l	Cond. uS/cm	Total P ug/l	Trans. m		Turb. ntu	pH
					NVS	VS		
Epilimnion	3.1	2.09	25.0	5	4.35	6.15	1.11	6.36
Metalimnion			24.8	7			1.36	6.24
Hypolimnion			26.8	14			2.52	5.75
Inlet			27.9	18			2.04	6.19
Outlet			24.4	4			0.91	6.47

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

Historical Water Quality Trend Analysis

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Improving	Data significantly decreasing.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
pH (epilimnion)	Worsening	Data significantly decreasing.	Transparency	Stable	Trend not significant; data show low variability.
			Phosphorus (epilimnion)	Stable	Trend not significant; data highly variable.